AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (original) A solid state image sensor comprising:

a semiconductor substrate having an imaging area and a peripheral area defined thereon so that said peripheral area surrounds said imaging area;

a field isolation dielectric formed as isolation regions on said substrate in said peripheral area;

a gate insulating film formed on said substrate in said imaging area and surrounded by said field isolation dielectric;

a plurality of vertical and horizontal shift register electrodes formed on said gate insulating film in said imaging area and on said field isolation dielectric in said peripheral area, said plurality of vertical and horizontal shift register electrodes being made from a single layer of conductor;

photoelectric conversion elements formed in said substrate, each element being surrounded by said vertical shift register electrode;

an interlayer insulation film having a planarized surface and covering said plurality of vertical and horizontal shift register electrodes, as well as gaps between said plurality of vertical and horizontal shift register electrodes, said interlayer insulation film being formed on said gate insulating film on each of said photoelectric conversion elements and formed lower than said vertical shift register electrode on each of said photoelectric conversion elements; and

a light shielding metal layer provided on said interlayer insulation film on said plurality of vertical and horizontal shift register electrodes and having openings above said photoelectric conversion elements, said light shielding metal layer serving as interconnects for making electrical connection to said plurality of vertical and horizontal shift register electrodes in said peripheral area.

2. (original) The solid state image sensor according to claim 1, wherein a distance between adjacent electrodes out of said plurality of vertical and horizontal shift register electrodes in said peripheral area is larger than a distance between adjacent electrodes out of said plurality of first and second shift register electrodes in said imaging area.

3. (original) The solid state image sensor according to claim 1, wherein said interlayer insulation film on said plurality of vertical and horizontal shift register electrodes in said imaging area is thinner than said interlayer insulation film on said plurality of vertical and horizontal shift register electrodes in said peripheral area.

4. (original) The solid state image sensor according to claim 1, wherein said interlayer insulation film on said plurality of vertical and horizontal shift register electrodes in said peripheral area and said interlayer insulation film on said plurality of second shift register electrodes in said imaging area have the same thickness and wherein said interlayer insulation film on said plurality of first shift register electrodes in said imaging area is thinner than said interlayer insulation film on said plurality of vertical and horizontal shift register electrodes in said peripheral area.

5. (original) The solid state image sensor according to claim 1, wherein said plurality of vertical shift register electrodes in said imaging area serve as a readout electrode used to transfer electrical charge generated in each of said

photoelectric conversion elements to a shift register channel below said plurality of vertical shift register electrodes.

6. (original)The solid state image sensor according to claim 1, further comprising a vertical shift register channel below said plurality of vertical shift register electrodes and a horizontal shift register channel below said plurality of horizontal shift register electrodes.

7. (original)The solid state image sensor according to claim 1, wherein a surface portion of said plurality of vertical and horizontal shift register electrodes in said imaging area is a silicide layer.

8. (original) A solid state image sensor comprising:

a semiconductor substrate having an imaging area and a peripheral area defined thereon so that said peripheral area surrounds said imaging area;

a field isolation dielectric formed as isolation regions on said substrate in said peripheral area;

a gate insulating film formed on said substrate in said imaging area and surrounded by said field isolation dielectric;

a plurality of shift register electrodes formed on said gate insulating film in said imaging area and on said field isolation dielectric in said peripheral area;

photoelectric conversion elements formed in said substrate in said imaging area, each element being surrounded by said shift register electrode; and

an interlayer insulation film having a planarized surface and covering said plurality of shift register electrodes, as well as gaps between said plurality of shift register electrodes, said interlayer insulation film being formed on said gate insulating film on each of said photoelectric conversion elements and formed lower than said shift register electrode surrounding each of said photoelectric conversion elements.

9. (original) The solid state image sensor according to claim 8, wherein said plurality of shift register electrodes are made from a single layer of conductor.

10. (original) The solid state image sensor according to claim 8, wherein a distance between adjacent electrodes out of said plurality of shift register electrodes in said peripheral area is larger than a distance between adjacent electrodes out

of said plurality of shift register electrodes in said imaging area.

11. (original) The solid state image sensor according to claim 8, further comprising a light shielding metal layer provided on said interlayer insulation film on said plurality of shift register electrodes, wherein said light shielding metal layer has openings above said photoelectric conversion elements and serves as interconnects for making electrical connection to said plurality of shift register electrodes in said peripheral area.

12. (original) The solid state image sensor according to claim 8, wherein said plurality of shift register electrodes comprises a plurality of vertical and horizontal shift register electrodes and wherein said plurality of vertical shift register electrodes are disposed adjacent said photoelectric conversion elements to retrieve electrical charge generated in said photoelectric conversion elements.

13. (original) The solid state image sensor according to claim 12, wherein said interlayer insulation film covers said plurality of vertical and horizontal shift register electrodes and gaps between said plurality of vertical and

horizontal shift register electrodes and wherein said interlayer insulation film on said plurality of vertical and horizontal shift register electrodes in said imaging area is thinner than said interlayer insulation film on said plurality of vertical and horizontal shift register electrodes in said peripheral area.

14. (original) The solid state image sensor according to claim 12, wherein said interlayer insulation film covers said plurality of vertical and horizontal shift register electrodes, as well as gaps between said plurality of vertical and horizontal shift register electrodes in said imaging area and wherein said interlayer insulation film on said plurality of vertical and horizontal shift register electrodes in said peripheral area and said interlayer insulation film on said plurality of horizontal shift register electrodes are the same in thickness, and wherein said interlayer insulation film on said plurality of vertical shift register electrodes in said imaging area is thinner than said interlayer insulation film on said plurality of vertical and horizontal shift register electrodes in said peripheral area.

15. (original) The solid state image sensor according to claim 12, further comprising a vertical shift register channel

below said plurality of vertical shift register electrodes and a horizontal shift register channel below said plurality of horizontal shift register electrodes.

16. (original) The solid state image sensor according to claim 12, wherein a surface portion of said plurality of vertical and horizontal shift register electrodes is silicide layer.

17. (original) A solid state image sensor comprising:

a semiconductor substrate having an imaging area and a peripheral area surrounding said imaging area;

a field isolation dielectric formed on said peripheral area to define said imaging area;

a plurality of photoelectric conversion elements formed in said imaging area, each of said photoelectric conversion elements having an insulating film formed on an associated part of said imaging area;

a charge transfer section provided in said imaging area to transfer charges generated by said photoelectric conversion elements, said charge transfer section having a plurality of shift register electrodes, each of shift register electrodes being elongated over said field isolation dielectric to form an elongated portion;

an interlayer insulation film covering the elongated portion of said each of said shift register electrodes so that said interlayer insulation film in said peripheral area is thicker than said insulating film of each of said photoelectric conversion elements; and

a conductive layer formed on said interlayer insulation film to cross the elongated portion of said each of said shift register electrodes.

18. (original) The solid state image sensor according to claim 17, wherein said plurality of shift register electrodes are made from a single layer of conductor.

19. (original) The solid state image sensor according to claim 17, wherein the elongated portions of said shift register electrodes are arranged such that a distance between adjacent elongated portions in said peripheral area is larger than a distance between adjacent elongated portions in said imaging area.

20. (original) The solid state image sensor according to claim 17, wherein said charge transfer section comprises vertical and horizontal charge transfer sections and wherein said interlayer insulation film on said elongated portions in said horizontal charge transfer section and said interlayer insulation

film on said elongated portions in said peripheral area are the same in thickness, and wherein said interlayer insulation film on said elongated portions in said vertical charge transfer section is thinner than said interlayer insulation film on said elongated portions in said peripheral area.

21. (new) A solid state image sensor comprising:

a semiconductor substrate having an imaging area and a peripheral area defined thereon so that said peripheral area surrounds said imaging area;

a field isolation dielectric formed as isolation regions on said substrate in said peripheral area;

a gate insulating film formed on said substrate in said imaging area and surrounded by said field isolation dielectric;

a plurality of shift register electrodes formed on said gate insulating film in said imaging area and on said field isolation dielectric in said peripheral area;

photoelectric conversion elements formed in said substrate in said imaging area, each element being surrounded by said vertical shift register electrode;

an interlayer insulation film covering said plurality of shift register electrodes in said imaging area and in said peripheral area so that said interlayer insulation film in said

peripheral area is thicker than said interlayer insulation film in said imaging area.

22. (new) A solid state image sensor according to claim 21, wherein an interlayer insulation film having a planarized surface and covering said plurality of shift register electrodes, as well as gaps between said plurality of shift register electrodes, said interlayer insulation film being formed on said gate insulating film on each of said photoelectric conversion element and formed lower than said shift register electrode surrounding each of said photoelectric conversion elements.

23. (new) The solid state image sensor according to claim 21, wherein said plurality of shift register electrodes comprises a plurality of vertical and horizontal shift register electrodes and wherein said plurality of vertical shift register electrodes are disposed adjacent said photoelectric conversion elements to retrieve electrical charge generated in said photoelectric conversion elements.

24. (new) The solid state image sensor according to claim 23, wherein said interlayer insulation film covers said plurality of vertical and horizontal shift register electrodes and gaps between said plurality of vertical and horizontal shift

register electrodes and wherein said interlayer insulation film on said plurality of vertical and horizontal shift register electrodes in said imaging area is thinner than said interlayer insulation film on said plurality of vertical and horizontal shift register electrodes in said peripheral area.

25. (new) The solid state image according to claim 23, wherein said interlayer insulation film covers said plurality of vertical and horizontal shift register electrodes, as well as gaps between said plurality of vertical and horizontal shift register electrodes in said imaging area and wherein said interlayer insulation film on said plurality of vertical and horizontal shift register electrodes in said peripheral area and said interlayer insulation film on said plurality of horizontal shift register electrodes are the same in thickness, and wherein said interlayer insulation film on said plurality of vertical shift register electrodes in said imaging area is thinner than said interlayer insulation film on said plurality of vertical and horizontal shift register electrodes in said peripheral area.

26. (new) The solid state image sensor according to claim 23, further comprising a light shielding metal layer serving as interconnects for making electrical connection to said

plurality of vertical and horizontal shift register electrodes in said peripheral area.

27. (new) The solid state image sensor according to claim 23, wherein a distance between adjacent electrodes out of said plurality of vertical and horizontal shift register electrodes in said peripheral area is larger than a distance between adjacent electrodes out of said plurality of first and second shift register electrodes in said imaging area.

28. (new) The solid state image sensor according to claim 23, further comprising a vertical shift register channel below said plurality of vertical shift register electrodes and a horizontal shift register channel below said plurality of horizontal shift register electrodes.

29. (new) The solid state image sensor according to claim 23, wherein a surface portion of said plurality of vertical and horizontal shift register electrodes is silicide layer.